

# PSNH Hybrid Electric Bucket Truck

International Extended Cab – Hybrid Chassis (battery system) – 50' Terex Aerial



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of New Hampshire**

The Northeast Utilities System

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## Collaborative Effort

Public Service of NH (PSNH)

Granite State Clean Cities Coalition

NH Department Environmental Services



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# PSNH Hybrid Electric Bucket Truck

International Extended Cab – Hybrid Chassis (battery system) – 50' Terex Aerial

- PSNH deployed two units in November 2009
- Units deployed in Nashua and Hooksett (Manchester) Area Work Centers
- Similar battery charging concepts as a hybrid electric car
- Electronic Power Take Off operates aerial with diesel engine off
- 40-60% reduction in fuel use
- Reduced emissions ~ CO2 13.5 tons annually
- Actual MPG performance:
  - Beta Truck 3.60 MPG
  - Hybrid Trucks 4.57 and 4.71 MPG
  - 20-25% reduction in fuel use
- Additional petroleum and emissions reductions gained using bio-diesel
- Reduced emissions and noise also benefits employees in the work space
- Power issues when accelerating



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# PSNH Chevy Volt

Energy Park – Commercial Street – Manchester NH



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# PSNH Chevy Volt

Ayers Island Road – Bristol NH



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# PSNH Chevy Volt

## Summary

- In service August 2011
- NU – EPRI – three year study on electric car technology / electric power grid
- Many issues to be resolved on charging – metering – rates – standardization, etc.
- Charging station at PSNH Energy Park – 780 North Commercial St. – Manchester NH
- 220-V charging station provides full charge in about 4 hours
- 110/120V 20-amp outlet provides full charge in about 10-12 hours
- Lithium-ion rechargeable energy storage system
- Expected battery life 5-10 years
- Based on national average \$0.1147/kWh, about \$1.83 per charge
- Full charge operates car for about 25-50 miles depending on weather conditions
- Onboard engine maintains battery power for about 300 miles
- MSRP \$40K / Federal Tax credit \$7,500
- Year to date ending April 30, 2012 - miles driven 5,508 - MPG 89.5



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# PSNH Plug In Hybrid Electric Service Truck

Ford 550 with Plug In – Hybrid (battery system) – 38' Terex Aerial



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# PSNH Plug In Hybrid Electric Service Truck

Ford 550 with Plug In – Hybrid (battery system) – 38' Terex Aerial

- PSNH deployed one unit in April 2012
- Currently considering the purchase of five additional units
- Unit deployed in the Tilton Area Work Center
- Battery charging:
  - Batteries will charge during road travel
  - Plug in capability - standard electrical receptacle - 110/120V 15-amp
  - Six hours to full charge
  - Run time off batteries 6 to 8 hours
  - Vehicle with auto start if batteries demand charging
- Estimated savings of \$3K-\$4K in fuel use annually
- Reduced emissions and noise also benefits employees in the work space
- Vehicle is performing as expected



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# PSNH

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